Applicant submits that the present invention is patentably defined by Claims 1-5, 11, 12 and 15. Therefore, Applicant requests favorable reconsideration and withdrawal of the rejections set forth in the above-noted Office Action.

Claim 4 was rejected under 35 U.S.C. § 112, second paragraph, as being indefinite. The Examiner objected to a specific recitation in that claim. To expedite prosecution, Applicant has amended Claim 4 in light of the Examiner's comments. Applicant submits that these changes overcome the rejection under 35 U.S.C. § 112, second paragraph. Such favorable indication is requested.

Turning now to the art rejections, Claims 1-5, 11, 12 and 15 were rejected under 35 U.S.C. § 102 as being anticipated by U.S. Patent No. 5,883,704 to Nishi et al. These claims also were rejected under 35 U.S.C. § 103 as being unpatentable over U.S. Patent No. 4,690,528 to Tanimoto et al. Applicant submits that the cited art does not teach many features of the present invention, as previously recited in independent Claims 1 and 15. Therefore, these rejections are respectfully traversed. Nevertheless, to expedite prosecution, Applicant has amended independent Claims 1 and 15 to amplify the distinctions between the present invention and the cited art.

In one aspect of the invention, independent Claim 1 recites an exposure apparatus that includes an illumination

optical system for illuminating an original with an F_2 excimer laser, a projection optical system for projecting a pattern of the original onto a substrate to be exposed and gas purging means for replacing an inside space, which accommodates optical components of at least one of the illumination optical system and the projection optical system, with a dry gas.

In another aspect of the invention, independent Claim 15 recites a device manufacturing method that includes illuminating an original with an F_2 excimer laser using an illumination optical system, projecting, using a projection optical system, a pattern of the original onto a substrate to be exposed to manufacture a device and replacing, using gas purging means, an inside space, which accommodates optical components of at least one of the illumination optical system and the projection optical system, with a dry gas.

Accordingly, the present invention recited in independent Claims 1 and 15 is directed to an exposure apparatus using an F_2 excimer laser, in which the inside space of the projection optical system or the illumination optical system is purged by using a dry gas which contains substantially no water content.

Generally speaking, an ArF excimer laser or an F_2 laser has an absorption band with respect to oxygen (O_2) and ozone (O_3). Particularly, the F_2 laser has an absorption band

also with respect to water. This is because the wavelength thereof (157nm) is shorter than that (193nm) of the ArF excimer laser. Thus, when an F_2 excimer laser is used as the exposure light, not only should the oxygen and ozone, but also, water should be desirably removed.

The inventor of the subject invention has paid particular attention to this, and proposes to use a dry gas containing substantially no water to purge the inside space of the illumination optical system or projection optical system. Thus, in the present invention, the term "dry gas" is used to refer to a gas containing substantially no water content.

Applicant submits that the cited art does not teach or suggest the salient features of Applicant's present invention as recited in independent Claims 1 and 15.

The Nishi et al. patent shows the use of a nitrogen gas, having an absorption band of an ArF excimer laser, to purge the inside space of an optical system. The Nishi et al. patent, however, does not mention anything about the removal of water. This is quite natural, because an ArF excimer laser does not involve the inconveniences of the presence of water. Thus, even if the Nishi et al. patent suggests removal of oxygen or ozone, it does not mean that that document suggests the removal of water, since to do so, is unnecessary in the structure shown in that document. Quite naturally, therefore, the Nishi et al.

patent does not mention anything about whether the nitrogen gas used in that arrangement is dry or not. This is in direct contrast to the present invention, since, in the present invention, a dry gas is specifically used, as is discussed in the subject specification on page 15 at line 23.

From the above, Applicant submits that it is clear that the Nishi et al. patent does not teach or suggest the use of a dry gas, containing substantially no water, to purge an inside space of an optical system in an exposure apparatus using an F_2 excimer laser, in the manner of the present invention recited in independent Claims 1 and 15.

The Tanimoto et al. patent shows a supply of a gas into an inside space of an optical system. This patent, however, does not teach or suggest anything about purging the inside space of an optical system by use of a dry gas containing substantially no water, in the manner of the present invention recited in independent Claims 1 and 15.

The Examiner takes the position that the Tanimoto et al. patent shows temperature control of a gas, and that to supply a dry gas would have been an obvious expedient. However, supplying a dry gas containing substantially no water has no relevance to adjusting the temperature of the gas. Rather, the use of a dry gas having substantially no water content is not at all suggested by the cited art, including the Tanimoto et al.

patent. Clearly, the use of a temperature control gas is far removed from the use of a dry gas containing substantially no water, as in the present invention.

In short, the Tanimoto et al. patent likewise does not teach or suggest the use of a dry gas, containing substantially no water, in an exposure apparatus having an F_2 excimer laser, to purge the inside space of an optical system, in the manner of the present invention recited in independent Claims 1 and 15.

For the foregoing reasons, Applicant submits that the present invention as recited in independent Claims 1 and 15, also is patentably defined over the cited art.

Dependent Claims 2-5, 11 and 12 also should be deemed allowable, in their own right, for defining other patentable features of the present invention in addition to those recited in their respective independent claims. Further individual consideration of these dependent claims is requested.

Applicant requests favorable reconsideration, withdrawal of the rejections set forth in the above-noted Office Action and early passage to issue of the present application.

Applicant's attorney may be reached in our Washington, D.C. office by telephone at (202) 530-1010. All correspondence should continue to be directed to our below-listed address.

Respectfully submitted,

Attorney for Applicant
Steven E. Warner
Registration No. 33,326

FITZPATRICK, CELLA, HARPER & SCINTO
30 Rockefeller Plaza
New York, New York 10112-3801
Facsimile: (212) 218-2200
SEW/ayr